



Replacement Sheet

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Title: ADENO-ASSOCIATED VECTOR COMPOSITIONS FOR EXPRESSION OF FACTOR VIII

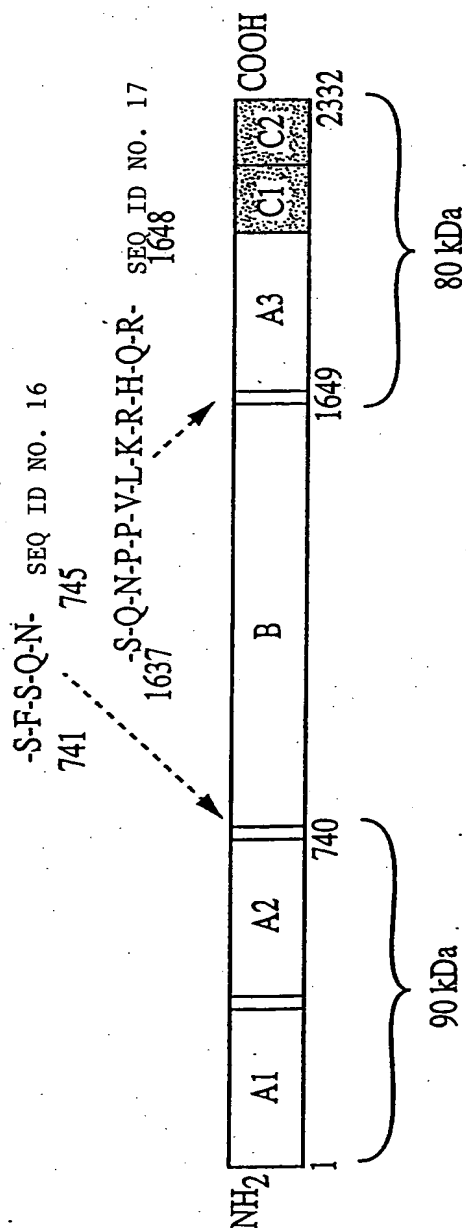


FIG. 1

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Replacement Sheet

-S-F-S-Q-N-P-P-V-L-K-R-H-Q-R- SEQ ID NO. 15

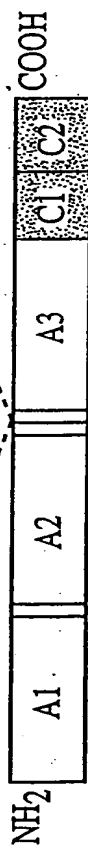


FIG. 2

Replacement Sheet

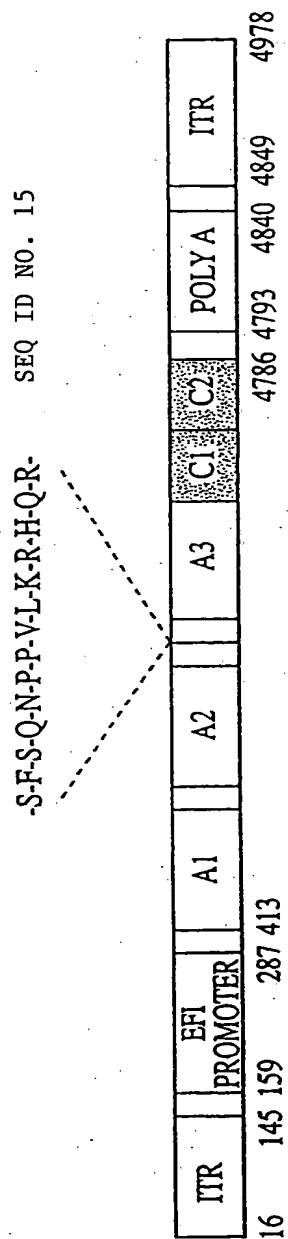


FIG. 4

Replacement Sheet

FIG. 5A

FIG. 5B

FIG. 5C

FIG. 5D

FIG. 5

SEQ ID NO. 13

CAGCTGCGCGCTCGCTCGCTCACTGAGGCCGCCCGGGCAAAGCCCGGGCGTCGGGCGACCTTTGGTCGCCCCGGCCTCAGT
GAGCGAGCGAGCGCGCAGAGAGGGAGTGGCCAACTCCATCACTAGGGGTTCCTGCGGCCGCCCAGGGAATGTTTGTCTT
AAATACCATCCAGGGAATGTTTGTCTTAAATACCATCCAGGGAATGTTTGTCTTAAATACCATCTACAGTTATTGGTT
AAAGAAGTATATTAGAGCGAGTCTTCTGCACACAGATCACCTTTCGGGTGCCGCCCTAGGCAGGTAAGTGCCGTGTG
TGGTTCCCGCGGGCCTGGCCTCTTTACGGGTATGGCCCTTGCGTGCCTTGAATTACTGACACTGACATCCACTTTTTCT
TTTTCTCCACAGGTATCGATTCCACCATGCAAATAGAGCTCTCCACCTGCTTCTTTCTGTGCCTTTTGCGATTCTGCTTT
AGTGCCACCAGAAGATACTACCTGGGTGCAGTGGAAGTGTCTGGAAGTATATGCAAAGTGATCTCGGTGAGCTGCCTGT
GGACGCAAGATTTCTCCTAGAGTGCCAAAATCTTTTCCATTCAACACCTCAGTCGTGTACAAAAGACTCTGTTGTAG
AATTCACGGATCACCTTTTCAACATCGCTAAGCCAAGGCCACCCTGGATGGGTCTGCTAGGTCTTACCATCCAGGCTGAG
GTTTATGATACAGTGGTCAATTACACTTAAGAACATGGCTTCCCATCCTGTCAGTCTTCATGCTGTTGGTGTATCCTACTG
GAAAGCTTCTGAGGGAGCTGAATATGATGATCAGACCAGTCAAAGGGAGAAAGAAGATGATAAAGTCTTCCCTGGTGAA
GCCATACATATGTCTGGCAGGTCTTGAAAGAGAATGGTCCAATGGCCTCTGACCCACTGTGCCTTACCTACTCATATCTT
TCTCATGTGGACCTGGTAAAAGACTTGAATTCAGGCCTCATTGGAGCCCTACTAGTATGTAGAGAAGGGAGTCTGGCCAA
GAAAAGACACAGACCTTGCACAAATTTATACTACTTTTTGTGTATTTGATGAAGGAAAAGTTGGCACTCAGAAACAA
AGAACTCCTTGATGCAGGATAGGGATGCTGCATCTGCTCGGGCCTGGCCTAAAATGCACACAGTCAATGGTTATGTAAAC
AGGTCTCTGCCAGGTCTGATTGGATGCCACAGGAAATCAGTCTATTGGCATGTGATTGGAATGGGCACCACTCCTGAAGT
GCACTCAATATTCCCTCGAAGGTACACATTTCTTGAGGGAACCATCGCCAGGCGTCTTGGAAATCTCGCCAATAACTT
TCCTTACTGCTCAAACACTCTTGATGGACCTTGGACAGTTTCTACTGTTTTGTATATCTCTTCCCACCAACATGATGGC
ATGGAAGCTTATGTCAAAGTAGACAGCTGTCCAGAGGAACCCCACTACGAATGAAAAATAATGAAGAAGCGGAAGACTA
TGATGATGATCTTACTGATTCTGAAATGGATGTGGTCAGGTTTGATGATGACAACCTCTCCTTCTTTATCCAAATTCGCT
CAGTTGCCAAGAAGCATCTAAAACCTTGGGTACATTACATTGCTGCTGAAGAGGAGGACTGGGACTATGCTCCCTTAGTC
CTCGCCCCGATGACAGAAGTTATAAAAGTCAATATTTGAACAATGGCCCTCAGCGGATTGGTAGGAAGTACAAAAAGT
CCGATTTATGGCATACACAGATGAAACCTTTAAGACTCGTGAAGCTATTCAGCATGAATCAGGAATCTTGGGACCTTTAC
TTTATGGGGAAGTTGGAGACACACTGTTGATTATATTTAAGAATCAAGCAAGCAGACCATATAACATCTACCCTCACGGA
ATCACTGATGTCCGTCTTTGTATTCAAGGAGATTACCAAAGGTGTAAAACATTTGAAGGATTTTCCAATTCTGCCAGG
AGAAATATTCAAATATAAATGGACAGTGAAGTAGAAGATGGGCCAACTAAATCAGATCCTCGGTGCCTGACCCGCTATT
ACTCTAGTTTCGTTAATATGGAGAGAGATCTAGCTTCAGGACTCATTGGCCCTCTCCTCATCTGCTACAAAGAATCTGTA
GATCAAAGAGGAAACCAGATAATGTCAGACAAGAGGAATGTCATCCTGTTTTCTGTATTTGATGAGAACCGAAGCTGGTA
CCTCACAGAGAATATAACAGCTTTCTCCCAATCCAGCTGGAGTGACAGCTTGAGGATCCAGAGTTCCAAGCCTCCAACA
TCATGCACAGCATCAATGGCTATGTTTTGTAGATTGTCAGTTGTCAGTTGTTTGCATGAGGTGGCATACTGGTACATT
CTAAGCATTGGAGCACAGACTGACTTCCTTTCTGTCTTCTCTCTGGATATACCTTCAAACACAAAATGGTCTATGAAGA

FIG. 5A

CACACTCACCTATTCCCATTTCTCAGGAGAACTGTCTTCATGTCGATGGAAAACCCAGGTCTATGGATTCTGGGGTGCC
ACAACTCAGACTTTCGGAACAGAGGCATGACCGCCTTACTGAAGGTTTCTAGTTGTGACAAGAACTGGTGATTATTAC
GAGGACAGTTATGAAGATATTTTACGATACCTTGCTGAGTAAAAACAATGCCATTGAACCAAGAAGCTTCGAAATAACTCG
TACTACTCTTCAGTCAGATCAAGAGGAAATTGACTATGATGATACCATATCAGTTGAAATGAAGAAGGAAGATTTTGACA
TTTATGATGAGGATGAAAATCAGAGCCCCCGCAGCTTTCAAAGAAAACACGACACTATTTTATTGCTGCAGTGGAGAGG
CTCTGGGATTATGGGATGAGTAGCTCCCCACATGTTCTAAGAAACAGGGCTCAGAGTGCCAGTGTCCTCAGTTCAAGAA
AGTTGTTTTCCAGGAATTTACTGATGGCTCCTTTACTCAGCCCTTATACCGTGGAGAACTAAATGAACATTTGGGACTCC
TGGGGCCATATATAAGAGCAGAAGTTGAAGATAATATCATGGTAACTTTCAGAAATCAGGCCTCTCGTCCCTATTCCCTTC
TATTCTAGCCTTATTTCTTATGAGGAAGATCAGAGGCAAGGAGCAGAACCTAGAAAAAACTTTGTCAAGCCTAATGAAAC
CAAACTTACTTTTGGAAAGTGCAACATCATATGGCACCCACTAAAGATGAGTTTGACTGCAAAGCCTGGGCTTATTTCT
CTGATGTTGACCTGGAAAAAGATGTGCACTCAGGCCTGATTGGACCCCTTCTGGTCTGCCACACTAACACACTGAACCCCT
GCTCATGGGAGACAAGTGACAGTACAGGAATTTGCTCTGTTTTTACCATCTTTGATGAGACCAAAAGCTGGTACTTCAC
TGAAAAATATGGAAAGAACTGCAGGGCTCCCTGCAATATCCAGATGGAAGATCCCACTTTTAAAGAGAATTATCGCTTCC
ATGCAATCAATGGCTACATAATGGATACACTACCTGGCTTAGTAATGGCTCAGGATCAAAGGATTCGATGGTATCTGCTC
AGCATGGGCAGCAATGAAAACATCCATTCTATTCTATTTCAGTGACATGTGTTCACTGTACGAAAAAAGAGGAGTATAA
AATGGCACTGTACAATCTCTATCCAGGTGTTTTTGAGACAGTGGAAATGTTACCATCCAAAGCTGGAATTTGGCGGGTGG
AATGCCTTATTGGCGAGCATCTACATGCTGGGATGAGCACACTTTTCTGGTGTACAGCAATAAGTGTGAGACTCCCTTG
GGAATGGCTTCTGGACACATTAGAGATTTTTCAGATTACAGCTTCAGGACAATATGGACAGTGGGCCCCAAAGCTGGCCAG
ACTTCATTATTCCGGATCAATCAATGCCTGGAGCACCAAGGAGCCCTTTTCTTGATCAAGGTGGATCTGTTGGCACCA
TGATTATTACGGGCATCAAGACCCAGGGTGCCCGTCAGAAAGTCTCCAGCCTCTACATCTCTCAGTTTATCATCATGTAT
AGTCTTGATGGGAAGAAGTGGCAGACTTATCGAGGAAATCCACTGGAACCTTAATGGTCTTCTTTGGCAATGTGGATTC
ATCTGGGATAAAACACAATATTTTAAACCCTCCAATTATTGCTCGATACATCCGTTTGACCCCAACTCATTATAGCATTC
GCAGCACTCTTCGCATGGAGTTGATGGGCTGTGATTTAAATAGTTGCAGCATGCCATTGGGAATGGAGAGTAAAGCAATA
TCAGATGCACAGATTACTGCTTCATCTACTTTACCAATATGTTTGCCACCTGGTCTCCTTCAAAGCTCGACTTCACCT
CCAAGGGAGGAGTAATGCCTGGAGACCTCAGGTGAATAATCCAAAAGAGTGGCTGCAAGTGGACTTCCAGAAGACAATGA
AAGTCACAGGAGTAATACTCAGGGAGTAAATCTCTGCTTACCAGCATGTATGTGAAGGAGTTCCTCATCTCCAGCAGT
CAAGATGGCCATCAGTGGACTCTCTTTTTTTCAGAATGGCAAAGTAAAGGTTTTTCAGGGAAATCAAGACTCCTTCACACC
TGTGGTGAATCTCTAGACCCACCGTTACTGACTCGTACCTTCAATTCACCCCCAGAGTTGGGTGCACCAGATTGCCC
TGAGGATGGAGGTTCTGGGCTGCGAGGCACAGGACCTCTACTGACTCGAGAATAAAAGATCAGAGCTCTAGAGATCTGTG
TGTTGGTTTTTTTGTGTGCGGCCGAGGAACCCCTAGTGATGGAGTTGGCCACTCCCTCTCTGCGCGCTCGCTCGCTCACT
GAGGCCGGGCGACCAAGGTGCCCCGACGCCCGGGCTTTGCCCGGGCGGCTCAGTGAGCGAGCGAGCGCGCAGCTGCCT
GCAGGACATGTGAGCAAAAGGCCAGCAAAAGGCCAGGAACCGTAAAAAGGCCGCGTTGCTGGCGTTTTTTCATAGGCTCC
GCCCCCTGACGAGCATCAAAAAATCGACGCTCAAGTCAGAGGTGGCGAAACCCGACAGGACTATAAAGATACCAGGCG
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GGGAAGCGTGGCGCTTTCTCATAGCTCACGCTGTAGGTATCTCAGTTCGGTGTAGGTGCTTCGCTCCAAGCTGGGCTGTG
TGCACGAACCCCCGTTACGCCCCACCGCTGCGCCTTATCCGGTAACTATCGTCTTGAGTCCAACCCGTAAGACACGAC
TTATCGCCACTGGCAGCAGCCACTGGTAACAGGATTAGCAGAGCGAGGTATGTAGGCGGTGCTACAGAGTTCTTGAAGTG
GTGGCCTAACTACGGCTACACTAGAAGGACAGTATTTGGTATCTGCGCTCTGCTGAAGCCAGTTACCTTCGGAAAAAGAG
TTGGTAGCTCTTGATCCGGCAAACAAACCACCGCTGGTAGCGGTGGTTTTTTTGTGTTGCAAGCAGCAGATTACGCGCAGA
AAAAAAGGATCTCAAGAAGATCCTTTGATCTTTTCTACGGGTCTGACGCTCAGTGAACGAAACTCACGTTAAGGGAT

FIG. 5B

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TTTGGTCATGAGATTATCAAAAAGGATCTTCACCTAGATCCTTTTAAATTAAAAATGAAGTTTAAATCAATCTAAAGTA
TATATGAGTAAACTTGGTCTGACAGTTACCAATGCTTAATCAGTGAGGCACCTATCTCAGCGATCTGTCTATTTTCGTTCA
TCCATAGTTGCCTGACTCCCCGTCGTGTAGATAACTACGATACGGGAGGGCTTACCATCTGGCCCCAGTGTGCAATGAT
ACCGCGAGACCCACGCTCACC GGCTCCAGATTTATCAGCAATAAACAGCCAGCCGGAAGGGCCGAGCGCAGAAGTGGTC
CTGCAACTTTATCCGCCCTCCATCCAGTCTATTAATTGTTGCCGGGAAGCTAGAGTAAGTAGTTCCGCAGTTAATAGTTTG
CGCAACGTTGTTGCCATTGCTACAGGCATCGTGGTGTACAGCTCGTCGTTTGGTATGGCTTCATTAGCTCCGGTTCCCA
ACGATCAAGGCGAGTTACATGATCCCCCATGTTGTGCAAAAAGCGGTTAGCTCCTTCGGTCCCTCCGATCGTTGTGAGAA
GTAAGTTGGCCGAGTGTATCACTCATGGTTATGGCAGCACTGCATAATTCTCTTACTGTATGCCATCCGTAAGATGC
TTTTCTGTGACTGGTGAGTACTCAACCAAGTCATTCTGAGAATAGTGTATGEGGCGACCGAGTTGCTCTTGCCCGGCGTC
AATACGGGATAATACCGCGCCACATAGCAGAACTTTAAAAGTGCTCATCTTGGAAAACGTTCTTCGGGGCGAAAACCTCT
CAAGGATCTTACCCTGTTGAGATCCAGTTCGATGTAACCCACTCGTGCACCCAACTGATCTTCAGCATCTTTTACTTTC
ACCAGCGTTTCTGGGTGAGCAAAAACAGGAAGGCAAAATGCCGCAAAAAGGGAATAAGGGCGACACGGAAATGTTGAAT
ACTCATACTCTTCCTTTTCAATATTAATGAAGCATTATCAGGGTTATTGTCTCATGAGCGGATACATATTTGAATGTA
TTAGAAAAATAAACAAATAGGGGTTCGCGCACATTTCCCCGAAAAGTGCCACCTGACGTCTAAGAAACCATTAATTATC
ATGACATTAACCTATAAAAATAGGCGTATCACGAGGCCCTTTCGTCTCGCGCGTTTCGGTGATGACGGTGAAAACCTCTG
ACACATGCAGCTCCCGGAGACGGTCACAGCTTGTCTGTAAGCGGATGCCGGGAGCAGACAAGCCCGTCAGGGCGCGTCAG
CGGGTGTGGCGGGTGTGCGGGCTGGCTTAATAATGCGGCATCAGAGCAGATTGTACTGAGAGTGCACCATAAAATTGTA
AACGTTAATATTTTGTAAAAATTCGCGTTAAATTTTGTAAATCAGCTCATTTTTTAACCAATAGGCCGAAATCGGCAA
AATCCCTTATAAATCAAAAAGAAATAGCCCGAGATAGGGTTGAGTGTGTTCCAGTTTGAACAAGAGTCCACTATTAAAGA
ACGTGGACTCCAACGTCAAAGGGCGAAAACCGTCTATCAGGGCGATGGCCCACTACGTGAACCATCACCCAAATCAAGT
TTTTTGGGGTCGAGGTGCCGTAAAGCACTAAATCGGAACCCCTAAAGGGAGCCCCGATTAGAGCTTGACGGGGAAAGCC
GGCGAACGTGGCGAGAAAGGAAGGAAGAAAGCGAAAGGAGCGGGCGCTAGGGCGCTGGCAAGTGTAGCGGTACGCTGC
GCGTAACCACACACCCGCCGCGCTTAATGCGCCGCTACAGGGCGCGTACTATGGTTGCTTTGACGTATGCGGTGTGAAA
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TTAATTGATCTGCATCAACTTAACGTAAAAACAACCTTCAGACAATACAAATCAGCGACACTGAATACGGGGCAACCTCAT
GTCAACGAAGAACAGAACCCCGCAGAACAAACCCGCAACATCCGCTTTCCTAACCAATGATTGAACAAATTAACATCG
CTCTTGAGCAAAAAGGGTCCGGGAATTTCTCAGCCTGGGTCAATTGAAGCCTGCCGTGGGAGACTAACGTCAGAAAAGAGA
GCATATACATCAATTAAGAGTGATGAAGAATGAACATCCCGGTTCTTCCCTCCGAACAGGACGATATTGTAAATTCAT
TAATTACGAGGGCATTGCAGTAATTGAGTTGCAGTTTTACCACCTTCTGACAGTGACAGACTGCGTGTGGCTCTGTCA
CAGACTAAATAGTTTGAATGATTAGCAGTTATGGTGATCAGTCAACCACCAGGGAATAATCCTTCATATTATTATCGTGC
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ACGTTGGCCTTACATACATCTGTGCGTTGATTTCCCTCCAGAATGCCAGCAGGACCGCACTTTGTTACGCAACCAATAC
TATTAAGTGAAAACATTCTAATATTTGACATAAATCATCAACAAAACACAAGGAGGTGAGACCAGATTGAAACGATAAA
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TCGATCAAGTGCGAAAAGATTTAGACTGTGAATTGTTTTATTCTGAACTAAAACGTCAACAGTCTCACATTATATTAC
TATCTAGCCACAGATAATATTACATCGTGTAGAAAACGATAACACCGTGTAAATAAAAGGACTTAAAAGGTTGTAAA
TGTTAAATTCTCAAGAAACACGCATCTTATAGAAACGTCTATGATAGGTTGAAATCAAGAGAAATCACATTTACGCAAT
ACAGGGAAAATCTTGCTAAAGCAGGAGTTTTCCGATGGGTACAAATATCCATGAACATAAAAGATATTACTATACCTTT

FIG. 5C

GATAATTCATTACTATTTACTGAGAGCATTTCAGAACACTACACAAATCTTTCCACGCTAAATCATAACGTCGGTTCCTT
CCGTGTCAGCACCGGGGCGTTGGCATAATGCAATACGTGTACGCGCTAAACCCTGTGTGCATCGTTTTAATTATTCCCGG
ACACTCCCGCAGAGAAGTTCCCCGTCAGGGCTGTGGACATAGTTAATCCGGGAATACAATGACGATTTCATCGCACCTGAC
ATACATTAATAAATATTAACAATATGAAATTTCAACTCATTTAGGGTTTGTTTAATTTCTACACATACGATTCTGC
GAACTTCAAAAAGCATCGGGAATAACACCATGAAAAAATGCTACTCGCTACTGCGCTGGCCCTGCTTATTACAGGATGT
GCTCAACAGACGTTTACTGTTCAAAACAAACCGGCAGCAGTAGCACCAGAAAGGAAACCATCACCCATCATTTCTTCGTTTC
TGGAATTGGGCAGAAGAAACTGTGCGATGCAGCCAAAATTTGTGGCGGCGCAGAAAATGTTGTTAAACAGAAACCCAGC
AAACATTCGTAAATGGATTGCTCGGTTTTATTACTTTAGGCATTTATACTCCGCTGGAAGCGCGTGTGTATTGCTCACAA
TAATTGCATGAGTTGCCCATCGCGATATGGGCAACTCTATCTGCACTGCTCATTAATATACTTCTGGGTTCTTCCAGTT
GTTTTTGCATAGTGATCAGCCTCTCTCTGAGGGTGAAATAATCCCGTTCAGCGGTGCTGCCAGTCGGGGGAGGCTGCA
TTATCCACGCGCGAGGCGGTGGTGGCTTCACGCACTGACTGACAGACTGCTTTGATGTGCAACCGACGACGACCAGCGGC
AACATCATCAGCAGAGCATCATTTTCAGCTTTAGCATCAGCTAACTCCTTCGTGTATTTTGCATCGAGCGCAGCAACAT
CACGCTGACGCATCTGCATGTGAGTAATTGCCGCTTCGCCAGCTTCAGTTCTCTGGCATTTTTGTGCGGCTGGGCTTTG
TAGGTAATGGCGTTATCACGGTAATGATTAACAGCCCATGACAGGCAGACGATGATGCAGATAACCAGAGCGGAGATAAT
CGCGGTGACTCTGCTCATACATCAATCTCTTGACCGTTCCGCGCGCTTCTTTGAATTTTGAATCAGGCTGTGAGCCTT
ATGCTCGAACTGACCATAACCAGCGCCCGGCAGTGAAGCCAGATATTGCTGCAACGGTCGATTGCCTGACGGATATCAC
CAGGATCAATCATAGGTAAAGCGCCACGCTCCTTAATCTGCTGCAATGCCACAGCGTCCTGACTTTTTCGGAGAGAAGTCT
TTCAGGCCAAGCTGCTTGCGGTAGGCATCCCACCAACGGGAAGAAGCTGGTAGCGTCCGGCGCCTGTTGATTTGAGTTT
TGGGTTTAGCGTGACAAGTTTTCGAGGGTGATCGGAGTAATCAGTAAATAGCTCTCCGCCCTACAATGACGTCATAACCAT
GATTTCTGGTTTTCTGACGTCCGTTATCAGTTCCCTCCGACCAGCCAGCATATCGAGGAACGCCCTTACGTTGATTATTG
ATTTCTACCATCTTCTACTCCGGCTTTTTTAGCAGCGAAGCGTTTGATAAGCGAACCAATCGAGTCAGTACCGATGTAGC
CGATAAACACGCTCGTTATATAAGCGAGATTGCTACTTTAGTCCGGCGAAGTCGAGAAGGTCACGAATGAACAGGCGATA
ATGGCGCACATCGTTGCGTCGATTACTGTTTTGTAAACGCACCGCCATTATATCTGCCGCGAAGGTACGCCATTGCAAA
CGCAAGGATTGCCCCGATGCCCTTGTTCCCTTGCCGCGAGAATGGCGGCCAACAGGTCATGTTTTCTGGCATCTTCATGT
CTTACCCCCAATAAGGGGATTGCTCTATTTAATTAGGAATAAGGTGCGATTACTGATAGAACAAATCCAGGCTACTGTGT
TTAGTAATCAGATTTGTTTCGTGACCGATATGCACGGGCAAAACGGCAGGAGGTTGTTAGCGCGACCTCCTGCCACCCGCT
TTCACGAAGGTCATGTGTAAGGCCGACGCTAATTAATTAATGAATTCAGGACAGACAGTGGCTACGGCTCAGTTT
GGGTTGTGCTGTTGCTGGGCGGCGATGACGCTGTACGCATTTGGTGATCCGGTCTGCTTCCGGTATTTCGCTTAATTCA
GCACAACGGAAAGAGCACTGGCTAACAGGCTCGCCGACTCTTCAGGATTATCGACTCAATGCTCTTACCTGTTGTGCAG
ATATAAAAAATCCCGAAACCGTTATGCAGGCTCTAATTAATTAATGCGAACTGTTTCGGGATTGCATTTTGCAGACCTCT
CTGCCTGCGATGGTTGGAGTTCCAGACGATACGTGCAAGTGACCAACTAGGCGGAATCGGTAGTAAGCGCCGCTCTTTT
CATCTCACTACCACAACGAGCGAATTAACCCATCGTTGAGTCAAATTTACCCAATTTTATTCAATAAGTCAATATCATGC
CGTTAATATGTTGCCATCCGTGGCAATCATGCTGCTAACGTGTGACCGCATTCAAAATGTTGTCTGCGATTGACTCTTCT
TTGTGGCATTGCACCACCAGAGCGTCATACAGCGGCTTAACAGTGCGTGACCGAGTGGGTTGGGTAAGGTTTGGGATTAG
CATCGTCACAGCGGATATGCTGCGCTTGCTGGCATCCTTGAATAGCCGACGCTTTGCATCTTCCGCACTCTTCTCGA
CAACTCTCCCCACAGCTCTGTTTTGGCAATATCAACCGCACGGCTGTACCATGGCAATCTCTGCATCTTGCCCCGGC
GTCGCGGCACTACGGCAATAATCCGCATAAGCGAATGTTGCGAGCACTTGACGTACCTTTGCCTTAGTATTTCTTCAAG
CTGCCCCCTGCAGG

FIG. 5D

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FIG. 6A

FIG. 6B

FIG. 6C

FIG. 6 SEQ ID NO. 14

CGCCCCCTGCAGGCAGCTGCGCGCTCGCTCGCTCACTGAGGCCGCCCGGGCAA
AGCCCCGGGCGTCGGGCGACCTTTGGTTCGCCCGGCCTCAGTGAGCGAGCGAGC
GCGCAGAGAGGGAGTGGCCAACTCCATCACTAGGGGTTCTTGCGGCCGCACG
CGTGGTGGCGCGGGGTAAACTGGGAAAGTGATGTCGTGTACTGGCTCCGCCT
TTTTCCCGAGGGTGGGGGAGAACCGTATATAAGTGCAGTAGTCGCCGTGAAC
GTTCTTTTTTCGCAACGGGTTTGCCGCCCCGCGGCAGGTAAGTGCCAGGGAAT
GTTTGTTCTTAAATACCATCGCTCCAGGGAATGTTTGTTCTTAAATACCATC
TACTGACACTGACATCCACTTTTTCTTTTTCTCCACAGGTATCGATCCACCA
TGCAAATAGAGCTCTCCACCTGCTTCTTTCTGTGCCTTTTGCGATTCTGCTT
TAGTGCCACCAGAAGATACTACCTGGGTGCAGTGGAAGTGTTCATGGGACTAT
ATGCAAAGTGATCTCGGTGAGCTGCCTGTGGACGCAAGATTTCTCCTAGAG
TGCCAAAATCTTTTCCATTCAACACCTCAGTCGTGTACAAAAGACTCTGTT
TGTAGAATTCACGGATCACCTTTTCAACATCGCTAAGCCAAGGCCACCCTGG
ATGGGTCTGCTAGGTCTTACCATCCAGGCTGAGGTTTATGATACAGTGGTCA
TTACACTTAAGAACATGGCTTCCCATCCTGTCAGTCTTCATGCTGTTGGTGT
ATCCTACTGGAAAGCTTCTGAGGGAGCTGAATATGATGATCAGACCAGTCAA
AGGGAGAAAGAAGATGATAAAGTCTTCCCTGGTGAAGCCATACATATGTCT
GGCAGGTCCTGAAAGAGAATGGTCCAATGGCCTCTGACCCACTGTGCCTTAC
CTACTCATATCTTTCTCATGTGGACCTGGTAAAAGACTTGAATTCAGGCCTC
ATTGGAGCCCTACTAGTATGTAGAGAAGGGAGTCTGGCCAAGGAAAAGACAC
AGACCTTGACAAATTTATACTACTTTTTTGCTGTATTTGATGAAGGGAAAAG
TTGGCACTCAGAAACAAAGAACTCCTTGATGCAGGATAGGGATGCTGCATCT
GCTCGGGCCTGGCCTAAAATGCACACAGTCAATGGTTATGTAAACAGGTCTC
TGCCAGGTCTGATTGGATGCCACAGGAAATCAGTCTATTGGCATGTGATTGG
AATGGGCACCACTCCTGAAGTGCACCTCAATATTCCTCGAAGGTCACACATTT
CTTG TGAGGAACCATCGCCAGGCGTCCTTGGAATCTCGCCAATAACTTTCC
TTACTGCTCAAACACTCTTGATGGACCTTGACAGTTTCTACTGTTTTGTCA
TATCTCTTCCCACCAACATGATGGCATGGAAGCTTATGTCAAAGTAGACAGC
TGTCCAGAGGAACCCCAACTACGAATGAAAAATAATGAAGAAGCGGAAGACT
ATGATGATGATCTTACTGATTCTGAAATGGATGTGGTCAGGTTTGATGATGA
CAACTCTCCTTCCTTTATCCAAATTCGCTCAGTTGCCAAGAAGCATCCTAAA

FIG. 6A

ACTTGGGTACATTACATTGCTGCTGAAGAGGAGGACTGGGACTATGCTCCCT
TAGTCCTCGCCCCCGATGACAGAAGTTATAAAAGTCAATATTTGAACAATGG
CCCTCAGCGGATTGGTAGGAAGTACAAAAAGTCCGATTTATGGCATAACACA
GATGAAACCTTTAAGACTCGTGAAGCTATTCAGCATGAATCAGGAATCTTGG
GACCTTTACTTTATGGGGAAGTTGGAGACACACTGTTGATTATATTTAAGAA
TCAAGCAAGCAGACCATATAACATCTACCCCTCACGGAATCACTGATGTCCGT
CCTTTGTATTCAAGGAGATTACCAAAAGGTGTAAACATTTGAAGGATTTTC
CAATTCTGCCAGGAGAAATATTCAAATATAAATGGACAGTGAAGTAGAAGA
TGGGCCAACTAAATCAGATCCTCGGTGCCTGACCCGCTATTACTCTAGTTTC
GTTAATATGGAGAGAGATCTAGCTTCAGGACTCATTGGCCCTCTCCTCATCT
GCTACAAAGAATCTGTAGATCAAAGAGGAAACCAGATAATGTCAGACAAGAG
GAATGTCATCCTGTTTTCTGTATTTGATGAGAACCGAAGCTGGTACCTCACA
GAGAATATACAACGCTTTCTCCCCAATCCAGCTGGAGTGCAGCTTGAGGATC
CAGAGTTCCAAGCCTCCAACATCATGCACAGCATCAATGGCTATGTTTTTGA
TAGTTTGCAGTTGTCAGTTTGTTCATGAGGTGGCATACTGGTACATTCTA
AGCATTGGAGCACAGACTGACTTCCTTTCTGTCTTCTTCTCTGGATATACCT
TCAAACACAAAATGGTCTATGAAGACACACTCACCCCTATTCCCATTTCTCAGG
AGAACTGTCTTCATGTGCGATGGAAAACCCAGGTCTATGGATTCTGGGGTGC
CACAACCTCAGACTTTCGGAACAGAGGCATGACCGCCTTACTGAAGGTTTCTA
GTTGTGACAAGAACACTGGTGATTATTACGAGGACAGTTATGAAGATATTTTC
AGCATACTTGCTGAGTAAAAACAATGCCATTGAACCAAGAAGCTTCTCCCAG
AATCCACCAGTCTTGAAACGCCATCAACGCGAAATAACTCGTACTACTCTTC
AGTCAGATCAAGAGGAAATTGACTATGATGATACCATATCAGTTGAAATGAA
GAAGGAAGATTTTGACATTTATGATGAGGATGAAAATCAGAGCCCCCGCAGC
TTTCAAAGAAAACACGACACTATTTTATTGCTGCAGTGGAGAGGCTCTGGG
ATTATGGGATGAGTAGCTCCCCACATGTTCTAAGAAACAGGGCTCAGAGTGG
CAGTGTCCCTCAGTTCAAGAAAGTTGTTTTCCAGGAATTTACTGATGGCTCC
TTTACTCAGCCCTTATACCGTGGAGAACTAAATGAACATTTGGGACTCCTGG
GGCCATATATAAGAGCAGAAGTTGAAGATAATATCATGGTAACTTTCAGAAA
TCAGGCCTCTCGTCCCTATTCTTCTATTCTAGCCTTATTTCTTATGAGGAA
GATCAGAGGCAAGGAGCAGAACCTAGAAAAAACTTTGTCAAGCCTAATGAAA
CCAAAACCTACTTTTGGAAAGTGCAACATCATATGGCACCCACTAAAGATGA
GTTTGACTGCAAAGCCTGGGCTTATTTCTCTGATGTTGACCTGGAAAAAGAT
GTGCACTCAGGCCTGATTGGACCCCTTCTGGTCTGCCACACTAACACACTGA
ACCCTGCTCATGGGAGACAAGTGACAGTACAGGAATTTGCTCTGTTTTTTCAC
CATCTTTGATGAGACCAAAGCTGGTACTTCACTGAAAATATGGAAAGAAAC
TGCAGGGCTCCCTGCAATATCCAGATGGAAGATCCCACTTTTAAAGAGAATT
ATCGCTTCCATGCAATCAATGGCTACATAATGGATACACTACCTGGCTTAGT
AATGGCTCAGGATCAAAGGATTCGATGGTATCTGCTCAGCATGGGCAGCAAT

FIG. 6B

GAAAACATCCATTCTATTCAATTTTCAGTGGACATGTGTTCACTGTACGAAAA
AAGAGGAGTATAAAATGGCACTGTACAATCTCTATCCAGGTGTTTTTGAGAC
AGTGGAAATGTTACCATCCAAAGCTGGAATTTGGCGGGTGGAAATGCCTTATT
GGCGAGCATCTACATGCTGGGATGAGCACACTTTTTCTGGTGTACAGCAATA
AGTGTTCAGACTCCCCTGGGAATGGCTTCTGGACACATTAGAGATTTTCAGAT
TACAGCTTCAGGACAATATGGACAGTGGGCCCCAAAGCTGGCCAGACTTCAT
TATTCGGATCAATCAATGCCTGGAGACCAAGGAGCCCTTTTTCTTGATCA
AGGTGGATCTGTTGGCACCAATGATTATTCACGGCATCAAGACCCAGGGTGC
CCGTCAGAAGTTCTCCAGCCTCTACATCTCTCAGTTTATCATCATGTATAGT
CTTGATGGGAAGAAGTGGCAGACTTATCGAGGAAATTCCACTGGAACCTTAA
TGGTCTTCTTTGGCAATGTGGATTCATCTGGGATAAAACACAATATTTTTAA
CCCTCCAATTATTGCTCGATACATCCGTTTGCACCCAATCATTATAGCATT
CGCAGCACTCTTCGCATGGAGTTGATGGGCTGTGATTTAAATAGTTGCAGCA
TGCCATTGGGAATGGAGAGTAAAGCAATATCAGATGCACAGATTACTGCTTC
ATCCTACTTTACCAATATGTTTGCCACCTGGTCTCCTTCAAAGCTCGACTT
CACCTCCAAGGGAGGAGTAATGCCTGGAGACCTCAGGTGAATAATCCAAAAG
AGTGGCTGCAAGTGGACTTCCAGAAGACAATGAAAGTCACAGGAGTAACTAC
TCAGGGAGTAAAATCTCTGCTTACCAGCATGTATGTGAAGGAGTTCCTCATC
TCCAGCAGTCAAGATGGCCATCAGTGGACTCTCTTTTTTCAGAATGGCAAAG
TAAAGGTTTTTCAGGGAAATCAAGACTCCTTCACACCTGTGGTGAACCTCTCT
AGACCCACCGTTACTGACTCGCTACCTTCGAATTCACCCCCAGAGTTGGGTG
CACCAGATTGCCCTGAGGATGGAGGTTCTGGGCTGCGAGGCACAGGACCTCT
ACTGACTCGAGCCTAATAAAGGAAATTTATTTTCATTGCAATAGTGTGTTGG
TTTTTTGTGTGCGGCCGCAGGAACCCCTAGTGATGGAGTTGGCCACTCCCTC
TCTGCGCGCTCGCTCGCTCACTGAGGCCGGGCGACCAAAGGTCGCCCCGACGC
CCGGGCTTTGCCCCGGGCGGCCTCAGTGAGCGAGCGAGCGCGCAGCTGCCTGC
AGGACAT

FIG. 6C